

## EXPLANATION OF PLATES.

## PLATE I.

Fig.

- 1, 1a. *Latirus Pulleinei*, Verco; 1b. Details of sculpture.
2. *Crassatella producta*, Verco.
3. *Crassatella micra*, Verco.
- 4, 4a. *Trophon Goldsteini*, Ten.-Woods.
- 4b. Without its external coating, showing well-marked color bands.
- 5, 5a. *Trophon angustus*, Verco.

## PLATE II.

- 1, 1a, 1b. *Latirus aurantiacus*, Verco.
- 2, 2a. *Murex Tatei*, Verco.
- 2b. Details of sculpture.
- 3, 3a. *Murex robustus*, Verco.
- 4, 4a. *Triton mimeticus*, Tate.
- 5, 5a. *Trophon levis*, Verco.
6. *Typhis Yatesi*, Crosse.

## PLATE III.

1. *Radula* of *Trophon Flindersi*, Ads., and Anj.
2. *Radula* of *Trophon Assisi*, Ten.-Woods.
3. *Radula* of *Trophon levis*, Verco.
4. *Radula* of *Fusus australis*, Quoy.
5. *Radula* of *Fusus pyrulatus*, Reeve.
6. *Radula* of *Fusus Dunkeri*, Jonas.
7. *Radula* of *Fusus Lincolnensis*, Crosse.
8. *Radula* of *Fasciolaria coronata*, Lam.
9. *Radula* of *Siphonalia dilatata*, Quoy.

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## A REVISION OF THE RECENT GASTEROPODS OF SOUTH AUSTRALIA.

## PART I.

By JOS. C. VERCO, M.D., Lond., F.R.C.S., Eng., &c.

[Read May 7, 1895.]

It is proposed in the present paper to enumerate in order the species of the Families Muricidæ, Tritonidæ, and Fusidæ, as a contribution towards a complete catalogue of the recent gasteropods of the Province of South Australia. Several circumstances have of late favored such an effort. (1.) The issue by Mr. D. J. Adcock in 1893 of "A List of Species of Aquatic Mollusca of South Australia," which provided local collectors with as accurate a catalogue of our shells as was then available. It has proved of considerable value, by enabling each conchologist to discover roughly what species he possessed not included among our known fauna. (2.) The formation of the Malacological Section of the

Royal Society. At its monthly meetings the species named in the above list have been critically discussed seriatim with the aid of specimens from the cabinets of its several members, and my thanks are here heartily tendered to the Section for permission in this paper to use the material which has been so carefully collated by its Honorary Secretary, Mr. R. H. Pulleine. (3.) Dredgings in the deeper waters of St. Vincent and Spencer Gulfs, which have been undertaken during the last five or six years, have supplied many new and interesting forms, as well as living or recent specimens, in considerable numbers, of species previously described. (4.) The examination of the odontophore from several of these molluscs.

The following plan will be pursued, as far as the material and literature at our disposal will permit. The name of each species in our waters will be given with a reference to the work in which it was described, that name being chosen which has priority in point of time. Synonyms, with their references, will be enumerated. The places where it is found in South Australia will be given, with the depth in fathoms, when known. Any information beyond that contained in the original description will be added.

If readers notice any omissions or inaccuracies, and will intimate the same to the writer of this article, he will be pleased to acknowledge them with thanks, and will endeavor to incorporate them in subsequent communications to the Society's Proceedings.

## FAMILY MURICIDÆ.

### GENUS MUREX.

#### 1. *M. triformis*, *Reeve*.

*Reference*.—Proc. Zool. Soc., 1845, p. 87. Conch. Icon. sp. 53.

*Habitat*.—Common throughout the whole coastline of South Australia. Also King George Sound, W.A., Victoria, and Tasmania, where, however, the specimens are much smaller. Most abundant, alive, in water from 5 to 10 fathoms, but it is found at all depths up to 22 fathoms (*J. C. Verco*).

#### 2. *M. Angasi*, *Crosse*.

*Reference*.—*Typhis Angasi*, Jour. de Conch., 1863, vol. XI., p. 86, t. 1, fig. 2.

Type specimen from Port Jackson, N.S.W.

*Syn*.—*M. eos*, Hutton, New Zealand. Tryon Man. of Conch., vol. II., p. 88. *M. zonatus*, Ten.-Woods, Proc. Roy. Soc. Tasm., 1876, p. 132.

*Habitat*.—Encounter Bay, Spencer Gulf, St. Vincent Gulf, Investigator Straits.

Dredged alive, 13 fathoms, 1; 15 fathoms, 1; 17 fathoms, 2. Dead from 13 to 22 fathoms (*J. C. Verco*), Tasmania.

**3. *M. umbilicatus*, Ten.-Woods. (*Trophon umbilicatus*).**

*Ref.*—Papers and Proceedings of the Royal Society of Tasmania, 1875-76, p. 135.

*Syn.*—*M. scalaris*, A. Adams (*non* Brocchi), Proc. Zool. Soc., 1853, p. 71.

Tryon in his Man. vol. II., p. 155, has placed it in *Urosalpinx*, which he defines as having a purpuroid operculum. But this species has a muricoid operculum, and belongs to the genus *Murex*. It was formerly confounded with *M. octogonus*, Quoy, Voy. de L'Astrol., 531, t. 36, figs. 8, 9.

Type specimen from the E. coast of Tasmania, uncommon.

*Hab.*—Spencer Gulf, St. Vincent Gulf, Backstairs Passage, Encounter Bay.

Dredged alive, 8 fathoms, 1; 12 fathoms, 2; 13 fathoms, 1; 14 fathoms, 2; 17 fathoms, 1; 19 fathoms, 2 (*J. C. Verco*).

**4. *M. Brazieri*, Angas.**

*Ref.*—Proc. Zool. Soc., 1877, p. 171, pl. 26.

This was formerly confounded with *M. polypleurus*, Brazier.

According to Angas, it is somewhat allied to *M. mundus*, Reeve; and according to Brazier, in Proc. Linn. Soc., N.S.W., vol. VIII., pt. I., *Trophon tumidus*, Petterd, is a synonym.

*Hab.*—Spencer and St. Vincent Gulfs, Investigator Straits, and Backstairs Passage (*J. C. Verco*), Encounter Bay (*D. J. Adcock*).

Type specimen, Port Jackson Heads, 20 fathoms. Dredged alive, 17 fathoms, 1. Dead at 17, 19, and 22 fathoms, several. Many alive and dead in deep-water dredge-siftings (*J. C. Verco*).

**5. *M. serotinus*, A. Adams.**

*Ref.*—Proc. Zool. Soc., 1851, p. 268.

*Syn.*—*M. Blainvillei*, Payr., a Mediterranean form, according to Sowerby.

*Hab.*—One specimen, obtained alive, amongst the rocks at low water, spring tides, Aldinga Bay (*Angas*).

No other collectors have taken it in Australia.

**6. *M. polypleurus*, Brazier.**

*Ref.*—Proc. Linn. Soc., N.S.W., vol. VIII., 1894, part II., p. 179.

This was formerly known here as *M. pumilus* of A. Adams, but proves to be quite a distinct shell. Brazier refers it to the subgenus Pseudo-Murex, Monteserato, 1872.

*Hab.*—Several alive and dead in deep water in Spencer and St. Vincent Gulfs, depth not measured (*J. C. Verco*).

7. *M. Tatei*, Verco.

*Ref.*—*Antea*, p. 84.

*Hab.*—Backstairs Passage, S.A. Dredged alive in deep water (*J. C. Verco*).

8. *M. robustus*, Verco.

*Ref.*—*Antea*, p. 85.

*Hab.*—Investigators Straits; deep water, several alive and dead (*J. C. Verco*).

## GENUS TYPHIS.

T. *Yatesi*, Crosse.

*Ref.*—*Jour. de Conch.* XIII., 1865, p. 54, pl. ii., fig. 3.

Type specimen, St. Vincent Gulf, S.A.

*Hab.*—Backstairs Passage, Spencer and St. Vincent Gulfs.

Dredged 15 fathoms, 1 alive; 17 fathoms, 1 alive; 22 fathoms, 1 dead. Several alive and dead in deep water (*J. C. Verco*). Pl. ii., fig. 6.

In living specimens which measure 12 mm. from the end of the spire to the end of the varix anteriorly whence the anterior tube springs, this is 6 mm. in length, and the posterior tube 9 mm. I have an individual which, including the whole length of the shell and anterior tube, would total 25 mm. Crosse's specimen was 14 mm. total length.

## GENUS TROPHON.

1. T. *Goldsteini*, Ten.-Woods.

*Ref.*—*Proc. Roy. Soc., Tasmania*, 1875, p. 136.

Type, Long Bay, Tasmania.

Several South Australian specimens compared with individuals from Tasmania, kindly lent by Miss Lodder, prove to be identical. Some, however, almost constitute a variety, being smaller, and with far less prominent spiral liræ. The shell in life is composed of two distinct layers, an inner enamel-like foundation and an outer sordid white, loose textured, soft chalk-like coating. In perfect specimens this is smooth, but when very slightly worn it shows numerous spiral and longitudinal fibres or incisions. In beach-rolled specimens this is nearly or entirely removed, leaving only the hard shining enamel-like basis, which shows numerous spiral threadlets besides the few sub-raised spiral liræ.

*Hab.*—Middleton and Rivoli Bay (*D. J. Adcock*), Streaky Bay, Pondolowie Bay (*J. C. Verco*). Dredged Spencer Gulf, 9 fathoms, 1; depth probably 15 fathoms, 4 alive, 1 dead; 10 fathoms, 1 dead; Backstairs Passage, 22 fathoms, 1 dead; Investigators Straits, 20 fathoms, 1 dead (*J. C. Verco*).

## 2. *T. angustus*, Verco.

*Ref.*—*Antea*, p. 86.

*Hab.*—St. Vincent Gulf; dredged deep water, 2 alive, 1 dead (*J. C. Verco*).

## 3. *T. Paivæ*, Crosse.

*Ref.*—*Jour. de Conch.*, Third Series, vol., XII., 1864, p. 278, pl. xi., fig. 7.

Type specimen collected at low tide under stones on Yorke's Peninsula, S.A.

Tryon classes it as a *Urosalpinx*, and regards *Fusus Hanleyi*, Angas, as an elate form (*Man. of Conch.*, vol. II., p. 155). But it is not a *Urosalpinx*, and *Fusus Hanleyi*, Angas, is a different shell altogether. He says also "it is not readily distinguished from *U. Floridana*, Conrad. Von Martens considers *Fusus corticatus*, Hutton, a synonym of *U. Paivæ*," *loc. cit.*

*Hab.*—Dredged alive and dead, deep water St. Vincent Gulf (*J. C. Verco*), Encounter Bay (*D. J. Adcock*).

## 4. *T. recurvus*, Koch (*Fusus*).

*Ref.*—*Abbild. und Beschreib.*, *Conch. Philippi*, vol. II., p. 119, tab. 3, fig. 6.

This shell was separated as a species distinct from *T. Paivæ*, by Mr. W. T. Bednall, who was proposing to describe it as new, when its identity with the *Fusus recurvus* of Koch, of unknown habitat, was recognised.

*Hab.*—St. Vincent Gulf, Salt Creek (*W. T. Bednall*), Semaphore, alive (*D. J. Adcock*).

## 5. *T. Assisi*, Ten.-Woods.

*Ref.*—*Proc. Roy. Soc. Tasmania*, 1876, p. 132.

Type specimens, N. Coast, Tasmania (*W. F. Petterd*).

Tryon classes it as a *Urosalpinx*, and "doubts its distinctness from *U. Paivæ*, Crosse. It is probably a young shell," *Man. of Conch.*, vol. II., p. 155.

But it is not a *Urosalpinx*, for its operculum is ovate, with an apical nucleus. It is quite distinct from *T. Paivæ*; as T. Woods says, "it is easily distinguished by its long canal, and peculiar lamellose striations" (longitudinal, *J. C. V.*).

It is not a young shell. Counting the number of its whorls, it is often older than *T. Paivæ*, and when full grown retains the same characters.

It has been placed in Mr. Adcock's list as a *Peristernia*; but the absence of columellar plications, and the muricoid, and not fasciolaroid radula, which is figured on pl. iii., fig. 2, remove it from that genus.

Dredged. Yankalilla Bay, St. Vincent Gulf, 15 fathoms, in ooze, 2 alive, 8 dead; Spencer Gulf, 13 fathoms, 2 dead; 15 fathoms, 2 dead; Investigators Straits, 15 fathoms, 3 alive, 3 dead; 17 fathoms, 9 alive, 68 dead (*J. C. Verco*).

#### 6. *T. Petterdi*, *Brazier*.

*Ref.*—*Jour. Conchyl.*, third series, vol. X., 1870, p. 303, and vol. XI., 1871, p. 324, t. 12, fig. 2.

*Syn.*—*T. clathratus*, Woods, according to Von. Martens (*Zool. Rec.*, 152, 1875).

*Murex scalarinus*, A. Adams, is identical or allied, according to Tryon.

*Hab.*—Middleton Beach, very many (*D. J. Adcock*). Aldinga Beach (*J. C. Verco*). Dredged Spencer Gulf, deep water, many alive and dead (*J. C. Verco*). The Levens Beach, under stones, Tasmania (*Miss Lodder*).

My dredged specimens are identical with some forwarded by Miss M. Lodder from Tasmania. Mr. Adcock's, from Middleton, appear to be the same species, but have a blunter apex, and a shorter snout, probably because beach-worn; they are also slightly larger and stouter, perhaps because from a more exposed locality, and more manifest color bands. These bands are evidently variable in number; some have three, one just below the suture, a second in the centre of the last whorl, a third below the periphery, and winding round the base. Some have only the lower two, others only the lowest, and some are destitute of bands.

#### 7. *T. Brazieri*, *Ten.-Woods*.

*Ref.*—*Proc. Roy. Soc. Tasmania*, 1875, p. 136.

Type specimen, Tasmania.

*Hab.*—MacDonnell Bay (*D. J. Adcock*); Victoria.

#### 8. *T. Flindersi*, *Ads. & Ang. (Purpura)*.

*Ref.*—*Proc. Zool. Soc.*, 1863, p. 421.

Type from Yorke Peninsula, S.A.

The operculum is distinctly muricoid, and not purpuroid; and Tryon is right in transferring it to *Trophon* from *Purpura*. Woods suggests that *T. Flindersi*, *T. littorinoides* (Ten.-Woods), and *T. propinqua* (Ten.-Woods) may prove varieties only of the same species. The Malacological Section of the Roy. Soc. of S.A. are of opinion that the latter two are synonymous with *Ricinula Adelaidensis*; but *T. Flindersi*, is a distinct species.

*Hab.*—Along the whole coast of South Australia, on rocks from high to low tides

Dentition, plate iii., fig. 1.



9. *T. levis*, Verco.

*Ref.*—*Antea*, p. 87.

*Hab.*—Backstairs Passage, St. Vincent Gulf, South Australia, 22 fathoms, dredged alive, one example (*J. C. Verco*).

## GENUS PURPURA.

1. *P. succincta*, Martyn.

*Ref.*—Univ. Conch., II., pl. 45.

Tryon gives South Australia as the metropolis of this species (*Man. of Conch.*, vol. II., p. 170), but the form figured by Martyn, having strong revolving ribs with excavated sides, is very rare on the South Australian coast. It would appear, however, that *P. textiliosa*, Lam. (*Edit. Desh.* 2, vol. X., p. 77), is only a variety of *P. succincta*, and this is a very common shell here. Tryon also affirms the identity of *P. ægrota*, Reeve (*Conch. Icon.* 1846, sp. 42), with *P. mancinella*, Linn. (*Syst. Nat.* Edit. 12, 1, 219), both of which are tuberculate forms. From a large number of specimens we have been able to obtain complete series of gradations between *P. succincta* and *P. textiliosa*, and between *P. textiliosa* and *P. ægrota*, proving them all to be but variations of a common species. As *P. succincta*, Martyn, has priority of description, this is chosen as the name of the species, and the rest are regarded as varieties. This is satisfactory, too, inasmuch as a form closely resembling the typical shell is the first to appear palæontologically in our Miocene strata (*teste, Tate*).

2. *P. striata*, Martyn (*Buccinum striatum*).

*Ref.*—Univ. Conch., t. 7; is also given by Tryon as a synonym for *P. succincta*.

It is unknown to local collectors, but included here on the authority of Brazier (*P.L.S., N.S.W.*, vol. V., p. 481, 1881).

3. *P. Baileyana*. Ten.-Woods.

*Ref.*—Proc. Roy. Soc., Victoria, 1880, p. 80.

Very rare in South Australia.

*Hab.*—Living on rocks, Guichen Bay (*Zietz*).

## GENUS RICINULA.

1. *R. Adelaidensis*, Crosse.

*Ref.*—*Jour. de Conch.*, 1865, vol. XIII., p. 50, t. 2, fig. 1.

Specimens of type and two varieties, *R. procerula* and *R. aurea*, from Port Adelaide and Gulf St. Vincent.

The Malacological Section are of opinion that *Trophon littorinoides*, Ten.-Woods (*Proc. Roy. Soc., Tasmania*, 1875, p. 135), and *Trophon propinqua*, Ten.-Woods (*Proc. Roy. Soc.*,

Tasmania, 1876, p. 136), are identical, as suggested by Woods himself, and are synonyms of *R. Adelaidensis*; but quite distinct from *Trophon Flindersi*, of which Woods thought they might be varieties.

*Hab.*—Streaky Bay to Encounter Bay, on rocks below high-tide mark.

## 2. *R. reticulata*, Quoy and Gaimard.

*Ref.*—Voy. de l'Ast, II., 566, t. 38, fig. 17, 18.

*Syn.*—*Purpura humilis*, Crosse and Fischer (Jour. de Conch., XIII., 1865, p. 51, t. 2, fig. 2); the type from St. Vincent Gulf.

Tryon regards these as young shells of the beaded form of *R. undata*, Chem. (Man. of Conch., vol. II., p. 189). This we are unable to determine.

*Dimensions.*—Crosse gives the dimensions as 12 mm. by 6 mm., but it often attains the magnitude of 18 mm. by 10 mm. Its station is quite different from that of *R. Adelaidensis*, which is a littoral shell; for it is dredged alive at 13 fathoms, 1; at 18 fathoms, 3; while larger specimens have been taken dead at 15 and 20 fathoms.

*Hab.*—Streaky Bay to Encounter Bay. Tasmania.

## GENUS ADAMSIA.

### A. *Adelaidæ*, Adams and Angas.

*Ref.*—Proc. Zool. Soc., 1863, p. 421, t. 37, fig. 2.

Type from Port Adelaide, S.A.

Tryon, in Man. of Conch., vol. II., p. 156, gives it as a variety of *Urosalpinx tritoniformis*, Blainville, which he says is identical with *Adamsia typica* of H. and A. Adams, and that *Purpura neglecta* of Adams and Angas is synonymous with *A. Adelaidæ*. Specimens of the first from N.W. Tasmania (*W. T. Bednall*) are, however, easily separable by their more elate form and much more numerous spiral liræ and scarcely visible incremental striæ. *P. neglecta* from Port Jackson (*W. T. Bednall*) is also distinguishable as a smaller shell, more elate, and angulate and tuberculo-plicate, and has a closer affinity with *Ricinula reticulata*, Q. and G.

## FAMILY TRITONIDÆ.

### GENUS TRITON.

#### 1. *T. nodiferus*, Lam.

*Ref.*—Edit. Desh., IX., 624.

*Syn.*—*T. Saulice*, Reeve, Proc. Zool. Soc., 1844, 112; Conch. Icon., 1844, fig. 17; and *T. australis*, Lam., Edit. Desh., IX., 625 (see Tryon Man., vol. III., p. 10).



One specimen in Adelaide Museum, found on Thistle Island, Spencer Gulf, by Mr. Zietz.

### 2. *T. subdistortus*, Lam.

*Ref.*—Edit. Desh., IX., 638.

*Hab.*—St. Vincent and Spencer Gulfs; Encounter and Lacedpede Bays (*D. J. Adcock*); Tasmania; Victoria.

Dredged alive, 10 fathoms, 4; 11 fathoms, 2; 12 fathoms, 1; 15 fathoms, 1, with many round yellow eggs attached separately to inside of deep valve of *Pecten fumatus*; 17 fathoms, 5; 22 fathoms, 1 (*J. C. Verco*).

### 3. *T. Bassi*, Angas.

*Ref.*—Zool. Proc., 1869, 45, t. 21, fig. 2.

*Syn.*—*T. fraterculus*, Dunker (Mal. Blatt., XVIII., 1871, 106).

Tryon, in his Man., vol. III., p. 11, says it is probably synonymous with *T. subdistortus*, but he could not have had the two shells for comparison; they are quite distinct.

Type from Corner Inlet, Bass Straits (*Brazier*).

*Hab.*—St. Vincent Gulf, Backstairs Passage, Investigators Straits (*J. C. Verco*), Encounter and Lacedpede Bays (*D. J. Adcock*).

Dredged alive, 14 fathoms, 1 mature and 6 minute fry inside the valve of a *Cardium multicostatum*; 17 fathoms, 4 and 1 immature; 19 fathoms, 1 in dead shell and coral (*J. C. Verco*).

### 4. *T. mimeticus*, Tate (*Sipho?*).

*Ref.*—Trans. Roy. Soc. S.A., 1893, part I., p. 189, pl. i., fig. 10; also *Verco*, ante, p. 88, pl. ii., figs. 4, 4a.

Tapley's Shoal, 12-16 fathoms, 1 dead (*Matthews*); Investigator's Straits, 15 fathoms, 1 dead; 20 fathoms, 1 dead (*Verco*).

### 5. *T. Spengleri*, Lam.

*Ref.*—Edit. Desh., IX., p. 627.

*Hab.*—Middleton (*D. J. Adcock*), Port Lincoln (*Perks*), Cable Cove, Cape Spencer (*J. Matthews*).

### 6. *T. Waterhousei*, Adams & Angas.

*Ref.*—Zool. Proc., 1864, p. 35.

Type from Port Lincoln.

*Hab.*—From Streaky Bay to Encounter Bay (*Verco*), Port Jackson.

Dredged alive, 14 fathoms, 1; 16 fathoms, 1; 20 fathoms, 2; 22 fathoms, 1 (*Verco*).

### 7. *T. Barthelemyi*, Bernardi.

*Ref.*—Jour. de Conch., 1857, p. 55. *Angas*, Proc. Zool. Soc., 1865, p. 161.

“Evidently very closely allied to *T. Spengleri*, of which it will very probably prove to be an overgrown form” (Tryon Man., vol. III., p. 17).

This shell has not been taken or recognised by local collectors. Angas, *loc. cit.*, gives its station “amongst rocks at low tides.” *Hab.*—Cape Northumberland; Gippsland, Victoria.  
He distinguishes it from *T. Spengleri*.

#### 8. *T. exaratus*, *Reeve*.

*Ref.*—Proc. Zool. Soc., 1844, p. 116; Conch. Icon., 1844, fig. 50.

Tryon (Man., vol. III., p. 23) suspects this to be identical with *T. gibbosus*, Brod.

Type from N. coast of Australia.

*Hab.*—Middleton and Kingston Beaches (*Adcock*).

#### 9. *T. Quoyi*, *Reeve*.

*Ref.*—Conch. Icon., 1844, fig. 93.

*Syn.*—“*T. viperinum* of Kiener, not Lamark—the latter being a distinct fossil form” (Tryon, Man., vol. III., p. 24).

*Hab.*—Along whole coast-line of South Australia. Tasmania; Victoria.

Dredged alive at all depths from 5 to 30 fathoms, many (*Verco*).

#### 10. *T. verrucosus*, *Reeve*.

*Ref.*—Proc. Zool. Soc., 1844, p. 118; Conch. Icon., 1844, fig. 71.

*Hab.*—Streaky Bay, Spencer Gulf (*Verco*), Aldinga and McDonnell Bay (*D. J. Adcock*).

#### 11. *T. eburneus*, *Reeve*.

*Ref.*—Proc. Zool. Soc., 1844, p. 118; Conch. Icon., 1844, fig. 69.

Type from Isle of Ticao, Philippines.

*Hab.*—Wallaroo Bay (*Maughan*), Corny Point, Spencer Gulf (*Perks*), Pondolowie and McDonnell Bays (*Verco*). Dredged one recent in 22 fathoms, Backstairs Passage (*Verco*).

#### 12. *Triton (Epidromus) Bednalli*, *Brazier*.

*Ref.*—Proc. Linn. Soc. of N.S.W., 1875, p. 6.

Type from Guichen Bay, S.A. (*Bednall*).

It may be dark mahogany-brown, or quite white, or with narrow brown bands, or with two rows of small square spots on each spire-whorl, and four on the body-whorl.

*Hab.*—Corny Point, Spencer Gulf, very fine (*Perks*); Middleton (*D. J. Adcock*), Victoria; St. Vincent and Spencer Gulfs, dredged 16, 20, and 22 fathoms, 1 dead (*Verco*).

## GENUS RANELLA.

1. *R. leucostoma*, Lamarck.

*Ref.*—Edit. Desh., vol. IX., p. 542; Reeve, Conch. Icon., fig. 4; Coq. Viv. Mon., p. 29, pl. ix., fig. 1.

*Hab.*—Middleton (*D. J. Adcock*), Yorke Peninsula, St. Vincent Gulf (*Matthews*); Tasmania; New Zealand.

2. *R. argus*, Gmelin.

*Ref.*—Dieff., N.Z., p. 229; Reeve, Conch. Icon., fig. 13; Chenu, fig. 713.

*Syn.*—*R. ranelliformis*, King, Zool. Jour., vol. V., p. 347; *R. vexillum*, Sow., Zool. Proc., 1841, p. 51; *R. proditor*, Frauenfeld, Verh. Zool. Bot. Gesell. Wien, XV., 1865, 894; Velain, Archives Zool. Exp., VI., 100, t. 2, fig. 5; *R. tumida*, Dunker, Zool. Proc., 1862, 239.

Type form from Cape of Good Hope.

*Ref.*—One small example cast up Port Elliot (*Miss E. Stow*); New Zealand.

## GENUS FUSUS.

1. *F. australis*, Quoy.

*Ref.*—Voy. de l'Ast., vol. II., p. 495, t. 24, figs. 9-14 (pl. xxxiv., according to Kiener in Coq. Viv. Mon. p. 25, pl. xii., fig. 1).

*Syn.*—*F. crebriliratus*, Rve., Conch. Icon., 1847, fig. 20; *F. marmoratus*, Phil., Abbild. & Besch., 1846, vol. II., p. 120, t. iii., fig. 7; *F. rudicostatus*, Sby., Thes. Conch., 1880, sp. 30, fig. 19; *F. levigatus*, Sby., Thes. Conch., 1880, sp. 30, fig. 157; *F. nodocinctus*, A. Ads., Zool. Proc., 1855, p. 222; *F. aureus*, Rve., Conch. Icon., 1847, fig. 17; *F. caudatus*, Quoy, Voy. de l'Ast., vol. II., p. 503, t. 34, fig. 20, 21.

Its dentition is figured by me on pl. iii., fig. 4, and shows a small rachidian tooth, with three short denticles, and a long, curved, ten-tooth lateral.

*Hab.*—Spencer and St. Vincent Gulfs, Encounter Bay. Dredged alive at all depths up to 23 fathoms (*Verco*).

2. *F. pyrulatus*, Reeve.

*Ref.*—Conch. Icon., 1847, t. 13, fig. 50a-50b.

"The type is from Tasmania, but it also occurs in Port Phillip Bay, and, according to Angas, in Spencer Gulf" (Tate, Trans. Roy. Soc. S.A., vol. XIV., p. 257).

Dredged alive in Hardwicke Bay, Spencer Gulf, many; Backstairs Passage, 15 fathoms, 1 small; 17 fathoms, 1 small. Investigator's Straits, 15 fathoms, 1 recent (*Verco*).

This shell, originally described by Reeve as a *Fusus*, and so

placed by Tryon (Man., vol. III., p. 60)—he had not seen the species—was named by Prof. Tate, *loc. cit.*, *Austrofusus pyru-latus*. A drawing of its dentition, given on pl. iii., fig. 5, shows a three-dentied rachidian and curved, saw-like laterals, and definitely withdraws it from *Siphonalia*, and makes it con-generic with *Fusus australis*.

### 3. *F. ustulatus*, Reeve.

*Ref.*—Conch. Icon., 1848, fig. 66.

This species was also classed by Prof. Tate, *loc. cit.*, as *Austro-fusus*; but Tryon regards it as a *Fusus*. Although I have not yet been able to determine its dentition, yet from its conchological characters, there is little doubt it will prove to be a *Fusus*. Tate also makes it a synonym of *F. sulcatus*, Lam. (An. s, Vert., 1822, vol. VII., p. 125). Tryon, on the other hand, gives *F. sulcatus* of Lam., as a *Siphonalia*, and *F. ustulatus* of Reeve as a *Fusus*. There is little question they are distinct species. Although Tryon gives South Australia as the habitat of *F. sulcatus*, Lam., yet Kiener, in Coq. Viv., when describing and figuring the species from the Lamarckian Collection, says the locality is unknown. I am not aware on what authority Tryon gives South Australia. The excellent plate in Coq. Viv., p. 26, pl. xiii., fig. 1, is that of quite a different shell from our *F. ustulatus*. The former is thin, very ventricose, and has marked, slightly wavy, transverse, dark-chocolate-brown spiral lines; whereas the latter is solid, by no means ventricose, much more attenuated in the spire, and ornamented only with a little scorching on the longitudinal costæ. Chenu's figure of *F. sulcatus* (Manuel de Conchyliologie, p. 140) is evidently not drawn from Lamarck's shell, and is as evidently *F. ustulatus*; here is the explanation of Tate's synonymy.

*Hab.*—No locality was known to Reeve, but Angas recorded it from St. Vincent Gulf. I have it from three widely separated beaches in this Gulf, and dredged in life, but small, at 19-24 fathoms. Encounter and Lacedpede Bays (*D. J. Adcock*).

### 4. *F. Dunkeri*, Jonas.

*Ref.*—Malak. Beitrag, 1844, p. 129; Abbild, &c., Phil., 1844, vol. II., p. 191, t. 4, fig. 4.

Tryon says (Man. of Conch., vol. III., p. 60) "this is evidently a very much worn specimen, and perhaps not adult; the locality also has not been confirmed by subsequent collectors," *i.e.*, the western coast of New Holland. I have a specimen from Eyre's Sand Patch, which is on the southern coast of Western Australia. He further remarks, "Dr. Philippi considered *F. Taylorianus*, Rve., a synonym, but I do not think the condition of *F. Dunkeri* justifies a positive conclusion. If the two species be merged, the

adopted name will be *Dunkeri*, which has decided priority of publication." Also "*F. Taylorianus*, Rve., appears to be a worn immature state of *F. cinereus*, Rve.," *loc. cit.* The worn state of Jonas's specimen is not so evident to me. It is certainly the same shell as *Siphonalia fuscozonata*, Angas (Proc. Zool. Soc., 1865, p. 56), which from Jonas's priority of definition becomes a synonym. It is not a *Siphonalia*, but a *Fusus*, as is plain from its dentition given in pl. iii., fig. 6. In Mr. Adcock's list it is classed as a *Peristernia*, but it has no trace of columellar folds.

*Hab.*—St. Vincent and Spencer Gulfs, Encounter Bay.

Dredged alive at all depths from 9 to 22 fathoms (*Verco*).

### 5. *F. Lincolnensis*, *Crosse*.

*Ref.*—*Jour. de Conch.*, XIII., 53, t. 2, fig. 4, 1865.

Type from Port Lincoln, S.A.

Tryon says (*Man. of Conch.*, vol. III., p. 66), "The coloration and very short canal remove this species from *Fusus*, yet I do not know where to locate it. Resembles a *Muricidea*." Its dentition I have shown on pl. iii., fig. 7. There is a rachidian tooth with three small cusps, and long curved saw-like laterals. The prongs of these are very variable in size, not only on any particular lateral, but even corresponding prongs on any pair of laterals, or on consecutive laterals. The radula disposes at once of any suggestion to place it among the *Muricidæ* as a *Muricidea* or *Ocinebra*, and classes it with the *Fuside*; while the absence of columellar folds decides its position in the genus *Fusus*. However, unlike ordinary species of the genus, it is left there by a process of exclusion.

*Hab.*—Spencer Gulf, St. Vincent Gulf, Encounter Bay.

Dredged alive, 10 fathoms, 1; 16 fathoms, 1; 20 fathoms, 1; 22 fathoms, 1; and dead at all depths from 9 to 22 fathoms, many (*Verco*). Under stones at low water, Port Lincoln (*Tate*).

*Fusus Novæ Hollandiæ*, Rve., and *Fusus Hanleyi*, Angas have not been collected in South Australian waters.

## GENUS FASCIOLARIA.

### 1. *F. fusiformis*, *Valenciennes*.

*Ref.*—*Kiener, Coq. Viv. Mon.*, p. 13, t. 4, fig. 2.

The habitat is given there as "The shores of New Holland," with the added note, "A species which still appears rare in collections. We do not know the locality. The Museum (*i.e.*, the Paris Natural History Museum) has two individuals." The shell which has hitherto been considered as *F. fusiformis* among local collectors is only a comparatively smooth variety of *F. coronata*. The true species is rare here, and is represented by

a specimen obtained by Mr. Adcock from Macdonnell Bay, and by two received by me from the same locality. It is a much smaller shell, 2 inches 3 lines, narrower, more regularly and abundantly spirally sulcated, and with well-marked numerous spiral liræ in the throat. Tryon doubts whether it is more than an extreme form of *F. filamentosa*, Lam. (Man., vol. III., p. 76).

## 2. *F. coronata*, Lam.

Ref.—Edit. 2, vol. IX., 435; Reeve, Mon., t. 6.

Type specimens from King and Kangaroo Islands.

Figured and described in Coq. Viv., p. 9, pl. ix., fig. 1, "A species rather common."

This is one of the most common of our Gasteropods, and one of the most variable. Some large specimens may be markedly angulated and coronated throughout all their whorls. Others may lose both angles and tubercles as early as the fourth whorl. These constitute the variety which has usually been regarded as *F. fusiformis*, but in all other respects they correspond with *F. coronata*. Others, after continuing in this form for one or two whorls, again assume the typical shape, and so demonstrate the freedom from angle and tubercles to be only a partial, and not even an individual variation.

Hab.—Throughout whole South Australian coast-line, at low tides attached to rocks.

Dredged alive, not common, up to 22 fathoms (*Verco*). Radula, pl. iii., fig. 8.

## GENUS LATIRUS.

### 1. *L. aurantiacus*, *Verco*.

Ref.—*Antea*, p. 79.

Unique. Dredged alive, Backstairs Passage, 18½ fathoms (*Verco*).

### 2. *L. Pulleinei*, *Verco*.

Ref.—*Antea*, p. 80.

Type from Eyre's Sand Patch, W. Australia.

Hab.—Largs Bay, St. Vincent Gulf (*D. J. Adcock*); sub-fossil in dredged silt, Port Adelaide (*Perks*).

## GENUS LATIROFUSUS.

### 1. *L. nigrofuscus*, *Tate*.

Ref.—Proc. Roy. Soc. S.A., vol. XIV., part II., p. 258, pl. xi., fig. 3.

Dredged alive, St. Vincent Gulf, 3-4 fathoms (*Matthews*); ? depth (*Verco*); Spencer Gulf, 13 fathoms, 1 (*Verco*); shell sand, Aldinga Bay (*Kimber*); Encounter Bay (*Adcock*).